**AUDIT COMMITTEE MEETING**
**WEDNESDAY, DECEMBER 14, 2016**
**9:00AM**

**625 ST. JOSEPH STREET**
**2ND FLOOR BOARD ROOM**

Dr. Tamika Duplessis, Chair; Marion Bracy, Vice Chair; Robin Barnes; Eric Blue; Scott Jacobs

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**FINAL AGENDA**

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**ACTION ITEM(S)**

1. NONE

**PRESENTATION ITEM(S)**

2. Overtime and Standby Time Overview

3. Monthly Human Resources Activity Report for the Report for the Period November 1 through November 30, 2016

4. Executive Director's Approval of Contracts of $1,000,000.00 or less

5. Veolia/Swiss

**INFORMATION ITEM(S)**

6. Statewide Agreed-Upon Procedures for Local Government Audits

7. Commitments of City Council Tracking Tool

8. Any other matters

# SEWERAGE AND WATER BOARD OF NEW ORLEANS

December 7, 2016

Strategy Committee
Sewerage and Water Board of New Orleans
New Orleans, Louisiana

Subject: Monthly Human Resources Activity Report for the Period November 1- November 30, 2016

Dear Directors:

Please find below an account of various Board human resources activities for the period November 1- November 30, 2016. This monthly snapshot is presented to keep you abreast of the progress and challenges related to the Board's ability to hire and retain the best qualified candidates to perform the Board's important work.

**Human Resources Activities**

Beginning Vacant Positions: 267

Ending Vacant Positions: 250

New Hire: 33

Resignations: 11

Retirement: 0

DROP Program Participants: 119

- Beginning Balance: 118
- New Member(s): 3
- Member(s) Removed 2

Promotions: 15

Disciplinary Actions: 10

- Reprimands: 4
- Suspensions: 3
- Terminations: 3

**Internal Alignment**

The two recruitment analysts have completed the 7 weeks Civil Service training and are now back and focused full time on recruiting and compensation tasks. Another recruitment analyst will start December 12, 2016, and finally an offer has been made and accepted for the Recruitment and Compensation Manager's position. This candidate will start December 19, 2016. As mentioned last month, our current focus is on providing additional assistance to our hiring managers to process the necessary paperwork and expedite the hiring process. The additional HR staff will allow us to better achieve this objective.

Sharon Judkins
Deputy Director-Administration

Cc: Attachments
Monthly Activity Report
Drop Summary
Resignation Analysis

| November Monthly Activity Report | | | |
|---|---|---|---|
| | | | |
| **DATE** | **ACTION** | **JOB TITLE** | **REASON** |
| **New Hires:** | | | |
| 11/7/2016 | | Accountant I | |
| 11/10/2016 | | Engineering Intern I | |
| 11/7/2016 | | Engineering Intern II | |
| 11/10/2016 | | Engineering Intern II | |
| 11/21/2016 | | Executive Secretary | |
| 11/21/2016 | | Executive Secretary | |
| 11/7/2016 | | Laborer | |
| 11/10/2016 | | Laborer | |
| 11/21/2016 | | Laborer | |
| 11/21/2016 | | Laborer | |
| 11/21/2016 | | Laborer | |
| 11/21/2016 | | Laborer | |
| 11/21/2016 | | Laborer | |
| 11/21/2016 | | Laborer | |
| 11/21/2016 | | Laborer | |
| 10/31/2016 | | Management Development Analyst I | |
| 11/10/2016 | | Management Development Analyst I | |
| 11/21/2016 | | Network Maintenance Technician I | |
| 11/10/2016 | | Office Assistant Trainee | |
| 11/10/2016 | | Office Assistant Trainee | |
| 11/10/2016 | | Senior Project Manager | |
| 11/10/2016 | | Utilities Plant Worker | |
| 11/10/2016 | | Utilities Plant Worker | |
| 11/10/2016 | | Utilities Plant Worker | |
| 11/21/2016 | | Utilities Plant Worker | |
| 11/21/2016 | | Utilities Plant Worker | |
| 11/21/2016 | | Utilities Plant Worker | |
| 11/21/2016 | | Utilities Plant Worker | |
| 11/21/2016 | | Utilities Plant Worker | |
| 11/21/2016 | | Utilities Plant Worker | |
| 11/21/2016 | | Utilities Plant Worker | |
| 11/21/2016 | | Utilities Plant Worker | |
| 11/21/2016 | | Utilities Plant Worker | |
| 11/10/2016 | | Utilities Senior Services Manager | |
| Total | 33 | | |
| **Resignations:** | | | |
| 10/28/2016 | | Network Maintenance Technician II | accepted employment outside of city civil service |
| 11/7/2016 | | Network Maintenance Technician II | accepted employment outside of city civil service |
| 11/16/2016 | | Network Maintenance Technician I | accepted employment outside of city civil service |
| 11/16/2016 | | Network Maintenance Technician II | accepted employment outside of city civil service |

| | | | |
|---|---|---|---|
| 11/21/2016 | | Management Development Analyst II | accept employment outside of city civil service |
| 11/23/2016 | | Laborer | accepted employment outside of city civil service |
| 11/23/2016 | | Plumbing Inspector II | accepted employment outside of city civil service |
| 11/21/2016 | | Office Assistant II | continued education |
| 11/23/2016 | | Office Assistant II | ill health |
| 10/21/2016 | | Office Assistant Trainee | other reasons |
| 11/15/2016 | | Office Assistant II | other reasons |
| Total | 11 | | |
| **DROP:** | | | |
| Started DROP | | | |
| 11/1/2016 | | Networks Senior Maintenance Technician I | Enter DROP |
| 11/1/2016 | | Public Works Maintenance Worker II | Enter DROP |
| 11/1/2016 | | Pumping Plant Operator | Enter DROP |
| Total | 3 | | |
| | | | |
| Ended DROP | | | |
| 11/1/2016 | | Accountant III | Exit DROP |
| 11/1/2016 | | Networks Senior Maintenance Technician I | Exit DROP |
| Total | 2 | | |
| **Promotions:** | | | |
| 11/9/2016 | | Administrative Support Specialist IV | |
| 11/16/2016 | | Management Development Specialist II | |
| 10/31/2016 | | Networks Maintenance Technician I | |
| 10/31/2016 | | Networks Maintenance Technician I | |
| 10/31/2016 | | Networks Maintenance Technician I | |
| 11/29/2016 | | Networks Maintenance Technician I | |
| 10/31/2016 | | Office Assistant III | |
| 11/16/2016 | | Office Support Specialist | |
| 11/22/2016 | | Office Support Specialist I | |
| 11/2/2016 | | Principal Engineer | |
| 10/24/2016 | | Principal Office Support Specialist | |
| 11/2/2016 | | Principal Office Support Specialist | |
| 11/9/2016 | | Senior Office Support Specialist | |
| 11/28/2016 | | Utilities Maintenance Trainee II | |
| 11/29/2016 | | Water Purification Operator II | |
| Total | 15 | | |

| Disciplinary Actions: | | | |
|---|---|---|---|
| 11/4/2016 | Reprimand | Office Assistant I | |
| 11/18/2016 | Reprimand | Public Works Maintenance Worker I | |
| 11/18/2016 | Reprimand | Public Works Maintenance Worker I | |
| 11/18/2016 | Reprimand | Public Works Supervisor I | |
| 10/27/2016 | Suspension | Environmental Enforcement Technician II | |
| 11/18/2016 | Suspension | Equipment Operator II | |
| 11/29/2016 | Suspension | Laborer | |
| 11/4/2016 | Termination | Laborer | |
| 11/4/2016 | Termination | Laborer | |
| 11/9/2016 | Termination | Networks Maintenance Technician I | |
| Total | 10 | | |

# Resignations for November 2016

| Date | Reason | Job Title |
|---|---|---|
| 10/28/2016 | Accept employment outside of City Civil Service | Network Maintenance Technician II |
| 11/7/2016 | Accept employment outside of City Civil Service | Network Maintenance Technician II |
| 11/16/2016 | Accept employment outside of City Civil Service | Network Maintenance Technician I |
| 11/16/2016 | Accept employment outside of City Civil Service | Network Maintenance Technician II |
| 11/21/2016 | Accept employment outside of City Civil Service | Management Development Analyst II |
| 11/23/2016 | Accept employment outside of City Civil Service | Laborer |
| 11/23/2016 | Accept employment outside of City Civil Service | Plumbing Inspector II |
| 11/21/2016 | Continue education | Office Assistant II |
| 11/23/2016 | Ill health | Office Assistant II |
| 11/15/2016 | Other reasons | Office Assistant II |
| 10/21/2016 | Other reasons | Office Assistant Trainee |

| Reason | # of Resignations | % of Total Resignations |
|---|---|---|
| Accept Employment Outside of City Civil Service | 7 | 64% |
| Avoid Disciplinary Action | | |
| Continue Education | 1 | 9% |
| Ill Health | 1 | 9% |
| Other Reasons | 2 | 18% |
| Transfer and/or Promotion to the City | | |
| | | |
| **Total** | 11 | 100 |

## DROP SUMMARY REPORT

| TITLE | START | END | TIME REMAINING (yrs) | AVG TIME REMAINING (YRS) | TOTAL EMPLOYEES ON DROP |
|---|---|---|---|---|---|
| ADMIN. SUPPORT SUPERVISOR 3 | 12/1/2011 | 12/1/2016 | 0.00 | 2.47 | 119 |
| INFORMATION TECHNOLOGY MANAGER | 12/5/2011 | 12/5/2016 | 0.01 | | |
| UTIL MAINT MASTER SUPERVISOR | 12/31/2011 | 12/31/2016 | 0.08 | | |
| NET SENIOR MAINTENANCE TECH 2 | 1/2/2012 | 1/2/2017 | 0.09 | | |
| WATER PURIFICATION OPERATOR 4 | 2/1/2012 | 2/1/2017 | 0.17 | | |
| WATER PURIFICATION OPERATOR 2 | 2/3/2012 | 2/3/2017 | 0.18 | | |
| FACILITIES ENGINEERING SPCL | 3/14/2012 | 3/14/2017 | 0.28 | | |
| POWER DISPATCHER 3 | 4/1/2012 | 4/1/2017 | 0.33 | | |
| SENIOR PRINCIPAL ENGINEER | 4/1/2012 | 4/1/2017 | 0.33 | | |
| SR. OFFICE SUPPORT SPECIALIST | 4/9/2012 | 4/9/2017 | 0.36 | | |
| CHIEF ACCOUNTANT | 4/30/2012 | 4/30/2017 | 0.41 | | |
| WATER SERVICE INSPECTOR 3 | 4/30/2012 | 4/30/2017 | 0.41 | | |
| UTIL MAINT MASTER SPECIALIST 2 | 5/1/2012 | 5/1/2017 | 0.42 | | |
| PUMPING STATIONS SUPV | 5/1/2012 | 5/1/2017 | 0.42 | | |
| PUBLIC WORKS SUPERVISOR 1 | 5/1/2012 | 5/1/2017 | 0.42 | | |
| UTILITY SERVICES ADMINISTRATOR | 5/1/2012 | 5/1/2017 | 0.42 | | |
| UTILITY SENIOR SERVICES ADMIN | 5/1/2012 | 5/1/2017 | 0.42 | | |
| ATTORNEY 4 | 5/1/2012 | 5/1/2017 | 0.42 | | |
| ENGINEERING TECHNICIAN | 6/1/2012 | 6/1/2017 | 0.50 | | |
| AUTOMOTIVE SECTION SUPERVISOR | 6/1/2012 | 6/1/2017 | 0.50 | | |
| PUBLIC WORKS SUPERVISOR 3 | 6/17/2012 | 6/17/2017 | 0.55 | | |
| WATER PURIFICATION OPERATOR 4 | 7/1/2012 | 7/1/2017 | 0.58 | | |
| FIELD SERVICE SUPERVISOR | 9/1/2012 | 9/1/2017 | 0.75 | | |
| NETWORKS ZONE MANAGER 1 | 9/8/2012 | 9/8/2017 | 0.77 | | |
| NET SENIOR MAINTENANCE TECH 2 | 10/7/2012 | 10/7/2017 | 0.85 | | |
| | | **Employees within 1 year:** | | 25 | |
| WAREHOUSE & SUPPLIES MGR | 1/3/2013 | 1/3/2018 | 1.09 | | |
| NET SENIOR MAINTENANCE TECH 1 | 1/21/2013 | 1/21/2018 | 1.14 | | |
| NET SENIOR MAINTENANCE TECH 2 | 3/1/2013 | 3/1/2018 | 1.25 | | |
| EQUIPMENT OPERATOR 3 | 3/1/2013 | 3/1/2018 | 1.25 | | |
| PUMPING STATIONS SUPV ASST | 3/1/2013 | 3/1/2018 | 1.25 | | |
| UTIL MAINT MASTER SPECIALIST 2 | 4/1/2013 | 4/1/2018 | 1.33 | | |
| OFFICE SUPPORT SPECIALIST | 5/1/2013 | 5/1/2018 | 1.42 | | |
| UTILITIES MAINT SUPERVISOR | 5/1/2013 | 5/1/2018 | 1.42 | | |
| OFFICE SUPPORT SPECIALIST | 5/1/2013 | 5/1/2018 | 1.42 | | |
| NET SENIOR MAINTENANCE TECH 2 | 5/31/2013 | 5/31/2018 | 1.50 | | |
| NET SENIOR MAINTENANCE TECH 1 | 6/1/2013 | 6/1/2018 | 1.50 | | |
| DEPUTY SPECIAL COUNSEL | 6/1/2013 | 6/1/2018 | 1.50 | | |
| NET MASTER MAINTENANCE TECH 2 | 6/1/2013 | 6/1/2018 | 1.50 | | |
| OFFICE ASSISTANT 3 | 6/3/2013 | 6/3/2018 | 1.51 | | |
| PUMPING STATIONS SUPV | 7/31/2013 | 7/31/2018 | 1.67 | | |
| OFFICE ASSISTANT 2 | 8/1/2013 | 8/1/2018 | 1.67 | | |
| OFFICE ASSISTANT 3 | 8/1/2013 | 8/1/2018 | 1.67 | | |
| NET MASTER MAINTENANCE TECH 2 | 8/12/2013 | 8/12/2018 | 1.70 | | |



DATA AS OF NOVEMBER 30, 2016

## DROP SUMMARY REPORT

| | | | | |
|---|---|---|---|---|
| PUMPING PLANT OPERATOR | 9/1/2013 | 9/1/2018 | 1.75 | |
| ENGINEERING SPECIALIST | 10/1/2013 | 10/1/2018 | 1.84 | |
| NET QUALITY ASSUR & SFTY INSPC | 11/1/2013 | 11/1/2018 | 1.92 | |
| FLEET SERVICES SUPERVISOR | 11/1/2013 | 11/1/2018 | 1.92 | |
| MANAGEMNT DEVELOPMNT SPECLST 2 | 12/1/2013 | 12/1/2018 | 2.00 | |
| | | **Employees within 2 years:** | | 23 |
| STEAM PLANT ENGINEER 2 | 12/2/2013 | 12/2/2018 | 2.01 | |
| UTIL MAINT MASTER SUPERVISOR | 1/3/2014 | 1/3/2019 | 2.09 | |
| LEGAL ADMINISTRATIVE ASSISTANT | 1/3/2014 | 1/3/2019 | 2.09 | |
| PUBLIC WORKS MAINTENANCE SUPT | 1/3/2014 | 1/3/2019 | 2.09 | |
| NETWORKS MAINTENANCE TECH 2 | 1/27/2014 | 1/27/2019 | 2.16 | |
| WATER PURIFICATION OPERATOR 2 | 2/1/2014 | 2/1/2019 | 2.17 | |
| PUMPING AND POWER PLANT OPR | 2/1/2014 | 2/1/2019 | 2.17 | |
| NET MASTER MAINTENANCE TECH 2 | 2/13/2014 | 2/13/2019 | 2.21 | |
| PUMPING AND POWER PLANT OPR | 3/1/2014 | 3/1/2019 | 2.25 | |
| PUMPING STATIONS SUPV ASST | 3/1/2014 | 3/1/2019 | 2.25 | |
| WATER PURIFICATION OPERATOR 3 | 6/4/2014 | 6/4/2019 | 2.51 | |
| OFFICE SUPPORT SPECIALIST | 6/6/2014 | 6/6/2019 | 2.52 | |
| EQUIPMENT OPERATOR 2 | 9/1/2014 | 9/1/2019 | 2.75 | |
| OFFICE ASSISTANT 3 | 10/1/2014 | 10/1/2019 | 2.84 | |
| NETWORKS MAINTENANCE TECH 1 | 10/30/2014 | 10/30/2019 | 2.92 | |
| NET SENIOR MAINTENANCE TECH 1 | 10/31/2014 | 10/31/2019 | 2.92 | |
| UTILITY SENIOR SERVICES MGR | 10/31/2014 | 10/31/2019 | 2.92 | |
| MANAGEMNT DEVELOPMNT SPECLST 2 | 11/1/2014 | 11/1/2019 | 2.92 | |
| PUMPING PLANT OPERATOR | 11/1/2014 | 11/1/2019 | 2.92 | |
| WATER PURIFICATION OPERATOR 1 | 11/20/2014 | 11/20/2019 | 2.97 | |
| MANAGEMNT DEVELOPMNT SPECLST 2 | 11/30/2014 | 11/30/2019 | 3.00 | |
| AUTOMOTIVE MAINT. TECHNICIAN | 12/1/2014 | 12/1/2019 | 3.00 | |
| | | **Employees within 3 years:** | | 22 |
| ADMIN. SUPPORT SUPERVISOR 3 | 12/15/2014 | 12/15/2019 | 3.04 | |
| NET SENIOR MAINTENANCE TECH 2 | 12/19/2014 | 12/19/2019 | 3.05 | |
| PUMPING STATIONS SUPV ASST | 12/31/2014 | 12/31/2019 | 3.08 | |
| NET MASTER MAINTENANCE TECH 1 | 12/31/2014 | 12/31/2019 | 3.08 | |
| STEAM PLANT ENGINEER 2 | 1/24/2015 | 1/24/2020 | 3.15 | |
| PUMPING STATIONS SUPV ASST | 2/1/2015 | 2/1/2020 | 3.17 | |
| UTILITY SERVICES ADMINISTRATOR | 3/1/2015 | 3/1/2020 | 3.25 | |
| FIELD SERVICE SUPERVISOR | 3/15/2015 | 3/15/2020 | 3.29 | |
| OFFICE SUPPORT SPECIALIST | 3/28/2015 | 3/28/2020 | 3.33 | |
| STEAM PLANT ENGINEER 1 | 3/31/2015 | 3/31/2020 | 3.33 | |
| OFFICE ASSISTANT 3 | 4/1/2015 | 4/1/2020 | 3.34 | |
| FIELD SERVICE SUPERVISOR | 4/9/2015 | 4/9/2020 | 3.36 | |
| PUMPING AND POWER PLANT OPR | 8/1/2015 | 8/1/2020 | 3.67 | |
| FLEET SERVICES MANAGER | 8/7/2015 | 8/7/2020 | 3.69 | |
| STEAM PLANT ENGINEER 4 | 9/22/2015 | 9/22/2020 | 3.81 | |
| POWER DISPATCHER 4 | 9/22/2015 | 9/22/2020 | 3.81 | |
| FIELD SERVICE SUPERVISOR | 10/1/2015 | 10/1/2020 | 3.84 | |
| NET SENIOR MAINTENANCE TECH 1 | 11/1/2015 | 11/1/2020 | 3.92 | |
| FIELD SERVICE SUPERVISOR | 11/1/2015 | 11/1/2020 | 3.92 | |

## DROP SUMMARY REPORT

| | | | | |
|---|---|---|---|---|
| NET SENIOR MAINTENANCE TECH 1 | 11/1/2015 | 11/1/2020 | 3.92 | |
| ADMIN. SUPPORT SUPERVISOR 3 | 11/26/2015 | 11/26/2020 | 3.99 | |
| CHIEF ACCOUNTANT | 11/28/2015 | 11/28/2020 | 4.00 | |
| | | **Employees within 4 years:** | | 22 |
| PUBLIC WORKS SUPERVISOR 2 | 12/2/2015 | 12/2/2020 | 4.01 | |
| ENGINEER INTERN 2 | 12/21/2015 | 12/21/2020 | 4.06 | |
| NET SENIOR MAINTENANCE TECH 2 | 12/30/2015 | 12/30/2020 | 4.08 | |
| NET MASTER MAINTENANCE TECH 1 | 12/30/2015 | 12/30/2020 | 4.08 | |
| SR. OFFICE SUPPORT SPECIALIST | 1/1/2016 | 1/1/2021 | 4.09 | |
| AUTOMOTIVE SERVICES SUPERVISOR | 1/8/2016 | 1/8/2021 | 4.11 | |
| UTIL MAINT MASTER SUPERVISOR | 1/8/2016 | 1/8/2021 | 4.11 | |
| UTIL MAINT MASTER SUPERVISOR | 1/8/2016 | 1/8/2021 | 4.11 | |
| UTIL MAINT MASTER SUPERVISOR | 1/11/2016 | 1/11/2021 | 4.12 | |
| NET SENIOR MAINTENANCE TECH 1 | 2/1/2016 | 2/1/2021 | 4.18 | |
| SR. OFFICE SUPPORT SPECIALIST | 2/2/2016 | 2/2/2021 | 4.18 | |
| NET SENIOR MAINTENANCE TECH 2 | 2/29/2016 | 3/1/2021 | 4.25 | |
| NET MASTER MAINTENANCE TECH 1 | 4/1/2016 | 4/1/2021 | 4.34 | |
| POWER DISPATCHER 3 | 4/1/2016 | 4/1/2021 | 4.34 | |
| OFFICE ASSISTANT 4 | 4/1/2016 | 4/1/2021 | 4.34 | |
| PUBLIC WORKS MAINTENANCE WKR 1 | 6/1/2016 | 6/1/2021 | 4.50 | |
| NET SENIOR MAINTENANCE TECH 2 | 6/1/2016 | 6/1/2021 | 4.50 | |
| PUBLIC WORKS MAINTENANCE WKR 1 | 6/4/2016 | 6/4/2021 | 4.51 | |
| LABORATORY TECHNICIAN 3 | 7/1/2016 | 7/1/2021 | 4.59 | |
| PUMPING STATIONS SUPV | 8/1/2016 | 8/1/2021 | 4.67 | |
| PUMPING AND POWER PLANT OPR | 8/1/2016 | 8/1/2021 | 4.67 | |
| UTILITY SERVICES ADMINISTRATOR | 9/1/2016 | 9/1/2021 | 4.76 | |
| FACILITIES ENGINEERING SPCL | 9/7/2016 | 9/7/2021 | 4.77 | |
| ADMIN. SUPPORT SUPERVISOR 3 | 10/8/2016 | 10/8/2021 | 4.86 | |
| PUMPING PLANT OPERATOR | 11/1/2016 | 11/1/2021 | 4.92 | |
| NET SENIOR MAINTENANCE TECH 1 | 11/1/2016 | 11/1/2021 | 4.92 | |
| PUBLIC WORKS MAINTENANCE WKR 2 | 11/1/2016 | 11/1/2021 | 4.92 | |
| | | **Employees within 5 years:** | | 27 |

## NOVEMBER SUMMARY

| | EFFECTIVE DATE | ACTION |
|---|---|---|
| PUMPING PLANT OPERATOR | 11/1/2016 | ADDITION |
| NET SENIOR MAINTENANCE TECH 1 | 11/1/2016 | ADDITION |
| PUBLIC WORKS MAINTENANCE WKR 2 | 11/1/2016 | ADDITION |
| NET SENIOR MAINTENANCE TECH 1 | 11/1/2011 | DELETION |
| ACCOUNTANT 3 | 11/1/2011 | DELETION |

# SEWERAGE AND WATER BOARD
## Inter-Office Memorandum

Date: December 6, 2016

From: Willie Mingo, Purchasing Agent
Purchasing Department

Thru: Vicki Rivers, Deputy Director
Sewerage and Water Board New Orleans - Logistics

To: Sharon Judkins, Deputy Director
Sewerage and Water Board New Orleans- Administration

Re: **Executive Director's Approval of Contracts of $1,000,000.00 or less**

1. Cycle Construction Co. LLC
   6 East Third Street, Kenner, LA 70062

   - Furnishing Secondary Chlorination Stations at Venetian Isles
     Contract #1393
   - 1-Year
   - $891,300.00

2. Postlewaite and Netterville
   1100 Poydras Street 30th Floor, New Orleans, LA 70163

   - Independent Financial Auditing Services
   - 4TH and Final Renewal
   - $90,000.00

3. Ourso-Beychok, Inc

   352 Napoleon Street, Baton Rouge, LA 70802

   - To provide creative direction, copywriting, design and production supervision for print and digital educational materials related to the operation of the water, sewer and drainage system as part of communication strategy to inform the public regarding the
     December 10, 2016 drainage millage election
   - 1-Year
   - $15,000.00

- Upon request, complete contract available for review in Procurement office.

Cc: Kathleen LaFrance

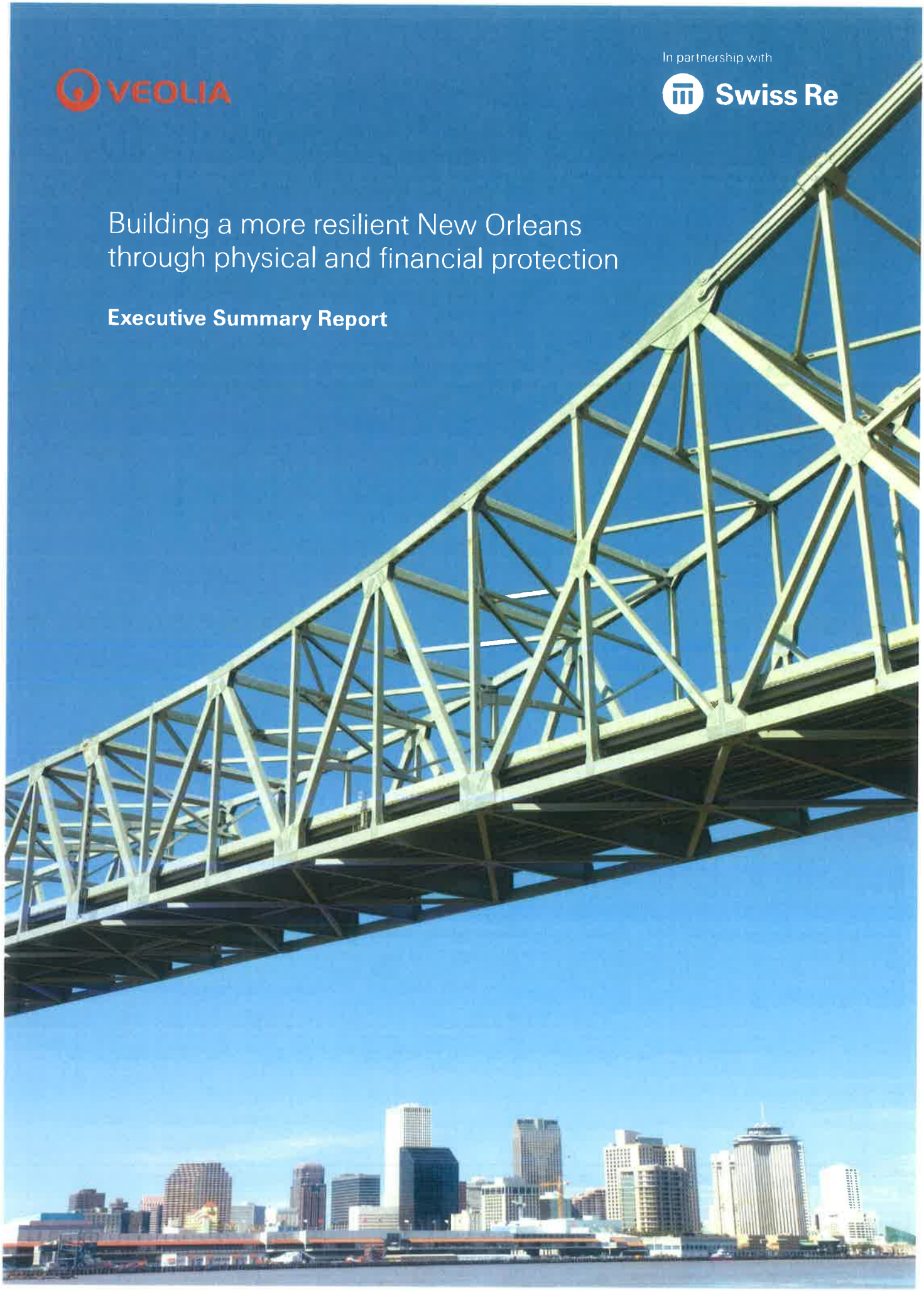
VEOLIA

In partnership with

Swiss Re

# Building a more resilient New Orleans through physical and financial protection

## Executive Summary Report



Dear Sirs

Resilient New Orleans – Executive summary report

In accordance with the terms of Amendment No. 1 to the Professional Services Agreement (the "Amendment") between Sewerage and Water Board of New Orleans (the "Board") and Veolia Water North America-South LLC ("Veolia"), Veolia and Swiss Re, as subcontractor to Veolia under the Amendment, enclose our executive summary report (the "Report") in connection with the risk evaluation of the Board's potable water, sewerage, drainage, and self-generated power infrastructure. The Report will be supplemented by a technical report (the "Technical Report") describing, inter alia, the methods used to assess the Board's assets exposure. The Report and, in particular, the figures contained in Section 5.2 should be read in conjunction with the Technical Report.

The scope of our work, as determined by the Board, is detailed in the Disclaimer on page 6 of the Report. You should note that our findings do not constitute recommendations to you as to whether or not you should proceed with certain capital expenditures. The Disclaimer should be read in conjunction with this letter and the Report.

Our Report is for the benefit and information only of the Board and should not be disclosed, in whole or in part, without our prior consent, except as specifically permitted in the Amendment. To the fullest extent permitted by law, we will not accept responsibility or liability to any other party in respect of our work in the Report.

Yours faithfully

# Contents

# Disclaimer – Scope of Work

- This Executive Summary Report (the Report) or any information submitted in connection therewith does not serve to modify, revise, change, negate or otherwise amend any provisions of Amendment No. 1 to the Professional Services Agreement. The content of the Report is necessarily limited by the information that has been available and reviewed to date, portions of which may still be subject to verification.
- Our work commenced on 23 June 2016 and our fieldwork was completed on 18 October 2016. We have not undertaken to update our Report for events or circumstances arising after such completion date.
- In preparing the Report, our primary source of information has been the management of the Sewerage and Water Board of New Orleans ("SWB"). We do not accept responsibility for such information which remains the responsibility of SWB. Details of our principal information sources are presented in the Report and we have satisfied ourselves, so far as possible, that the information presented in our Report was consistent with other information which was made available to us in the course of our work in accordance with the terms of Amendment No. 1 to the Professional Services Agreement. We have not, however, sought to establish the reliability of the sources by reference to other evidence.
- When referring to our "analysis", this indicates only that we have (where specified) undertaken certain analytical procedures on the underlying data to arrive at the information presented; we do not accept responsibility for the underlying data.
- The information used for the analysis was provided and validated during the course of the meetings with SWB management.
- Veolia Water North America-South LLC and its affiliates under no circumstances warrant the accuracy or completeness of the information given in the Report. All liability for the accuracy and completeness thereof or for any damage or loss resulting from the use of the information contained in this Report is expressly excluded. Under no circumstances shall Veolia Water North America-South LLC or its affiliates be liable for any financial or consequential loss relating to the use of this Report.
- Land subsidence was not taken into account for the analysis: considering that some studies show subsidence ranging from 0 to 1 inch per year, it is important to note that subsidence should be determined for each asset before engaging in capital expenditure and monitored over time to ensure mitigation measures are still effective.
- Levees and other protection measures implemented post Katrina by the US Army Corp of Engineers were not analysed or tested and were considered appropriate for the purpose of the Swiss Re modelling of potential events. Following Katrina, the US Army Corp of Engineers undertook studies to determine the appropriate levels needed for the levees and built them in light of their analysis and modelling. The scope of our work did not include an analysis of the works performed by the US Army Corp of Engineers. Moreover, the Swiss Re model assumes that the structures put in place would respond effectively to the weather events up to 100 - year return period.
- The scope of our works did not include the review of any of the flood protection measures in place outside of the assets under the control of SWB at the time of the analysis (e.g. canals, levees, storm surge walls).
- The scope of our works did not include any assessment or audit of the compliance of systems, processes, or operations in accordance with regulation or standards. In particular, water quality and compliance with standards were not in the scope of the analysis and therefore not tested.
- The analysis performed focussed on the critical assets of SWB's portfolio determined by its management.
- Our review did not include a valuation of the assets of the SWB portfolio. These values were provided by SWB's management.
- The mitigation costs are estimates and may be subject to change.

# 1 New Orleans: A highly protected city

Hurricane Katrina changed New Orleans substantially. This cultural gem of the United States will never be the same, but it retained its best attributes and improved irreversibly upon its weaknesses. This tragic event produced horrible loss of both life and property, yet it provided a tremendous opportunity to the City to lead the world in re-defining recovery and thoughtful development in the face of inevitable risk. Since Hurricane Katrina, billions of dollars have been deployed to increase the resilience to future events. In many respects, New Orleans has become the incubator of resilience building globally. As such, New Orleans is a highly protected city. This includes the assets of the Sewerage and Water Board of New Orleans (SWB), which provides critical drainage, wastewater and fresh water services to the city.

Over USD 14 billion has been spent to enhance or expand the levees in and around New Orleans since Hurricane Katrina. The investments into flood protection to date mean there have been significant savings from avoided losses to all physical assets across Orleans Parish. According to a sensitivity analysis with Swiss Re's tropical cyclone model, the flood protections in place today are saving Orleans Parish USD 650-750 million of property damage per year from storm surge on an annualized basis. These savings are significant, but should not distract from the fact that there is still considerable residual flood risk. Even with the investments made, the annual expected loss from hurricane-related storm surge is an estimated USD 175–275 million of property damage.

Prior to the levee failures due to storm surge erosion of the landward sides of the levee during Hurricane Katrina, there was no significant flooding at any of the SWB facilities. General consensus by SWB employees interviewed is that had the levees not failed, Hurricane Katrina would have had only minimal impact on the SWB assets and New Orleans' residents. Once the levees failed (approximately 3 days after Hurricane Katrina's landfall along the Gulf Coast) the drainage pump stations were shut down to keep from simply recycling the same water to Lake Pontchartrain and back. At the same time, the power plant at the Carrollton Water Treatment Plant was shut down due to water flooding the basement and threatening to compromise the existing electrical equipment. This equipment has since been moved upward to the first and second floors. According to SWB staff, the storm drainage pump stations were able to de-water New Orleans 8 to 14 days following repairs to the levee.

The proper functioning of the levee system is the single most important factor in reducing losses. The drainage capacity of SWB pumps is critical to keep flooding from rainfall and overtopping to a minimum. At 50% SWB pumping capacity, based on US Army Corp of Engineers (USACE) 500-year flood depth maps, Swiss Re estimates that property damage in Orleans Parish could be below USD 4 billion, provided the flood walls do not fail.

Notwithstanding the significant loss reduction created by this system, it is important to note that system failure would lead to devastating flooding and would have significant impacts on both the physical assets and economy of New Orleans, including the SWB. To prepare for this possibility, albeit remote, it is imperative that SWB assets continue to function or come back online swiftly to reduce the City's effective disruption and downtime, even in the event of a severely disruptive flood.

## 2 The value of the SWB to the economic productivity and resilience of Orleans Parish

The SWB provides fresh water, wastewater treatment and water drainage, among other services, for the entire Orleans Parish. Like any living organism, a city thrives on the collaborative and efficient functioning of interconnected systems. Each system and the service it provides are critical. Moreover, the interconnected function of these systems make them indispensable to the liveability of a city. Shocks, such as natural disasters, can damage critical physical assets, as well as interrupt the delivery of these services to residents and businesses, creating often profound long-term economic impacts. Every sector of an economy can face a variety of consequences from disruptive events, such as hurricanes – some more than others. Economies heavily dependent on tourism, hospitality or the movement of goods can suffer more deeply as revenues from these sectors are often diverted elsewhere and are rarely recovered. While the physical assets of various sectors of an economy may be left unscathed by a disaster, their ability to operate diminishes if critical infrastructure is impaired. Hence, any considerable disruption of these services can have sizeable and lasting impacts on a local economy. Reducing the possible downtime of critical assets is necessary to enhance the City's resilience.

Hurricane Katrina, which flooded nearly 80% of New Orleans, had considerable repercussions for the City's population, economy and public finances. While the majority of business activity came to a complete standstill after Hurricane Katrina made landfall, the ability of businesses to reopen, and the City's sales tax revenues to rebound, were strongly correlated to the availability of critical services. Drainage pump stations began to work one week after the event and drinking water returned fully only after eleven weeks.

It is estimated that tourism in Orleans Parish generates an average of USD 250 million per year in direct tax revenue for the city, making it the single largest industry revenue producer. However, as a result of events like Hurricane Katrina, revenues that would have otherwise been generated, drop precipitously. This can be the result of cancelled conventions, shuttered restaurants, hotels, or stores. Additionally, the longer term impact of lost tax revenue, via reduced property values, can have an impact on the City's ability to operate and plan strategically.

Orleans Parish lost USD 325 million in tax and other revenues[1] between 2005 and 2006 due to the lasting effects of Katrina; the SWB sustained USD 117 million in damage. From a different perspective, for every USD 100 of property damage, Orleans Parish lost USD 0.61 in tax revenue.

In the 130 days after Katrina, the city lost on average USD 25.3 million per day in GDP (USD 760 million per month). This is derived from the assumption that business activity produces about half of the GDP[2] and Katrina forced 80% of the businesses to shut down. Today, one month of hurricane-related downtime would reduce the City's economic output by roughly the same amount (based on an estimated Orleans Parish annual GDP of USD 23.5 billion).

## 3 Defining the resilience dividend

Substantial economic value and productivity are susceptible to the impacts of various SWB service disruptions. This analysis, therefore, aims to determine the potential improvements that can be made to those SWB assets providing the greatest resilience dividend in terms of reducing losses against capital investment in current and future climate scenarios. Exploring the cost of various risk reduction measures against the value of averted losses over the lifetime of the investment should provide a roadmap to prioritize efforts and maximize the efficiency of taxpayer funded initiatives.

[1] New Orleans tax report, 2016

[2] Leung & Rispoli, 2011 estimate that businesses contribute 50% to US GDP

# 4 Risk model and assessment of SWB assets under current protections

Utilizing its proprietary Tropical Cyclone model for the United States (TCUS), Swiss Re performed a risk analysis using both current climate and future climate change scenarios. TCUS follows the four-box catastrophe model framework[3] (hazard, vulnerability, value distribution, insurance conditions) and includes the most current scientific and engineering research. While the modelling methodology is detailed in a more in-depth Technical Report, a few key points should be considered here.

The model uses over 1 100 historical events over 117 years to develop a probabilistic track set containing 223 400 tropical cyclones. With an annual occurrence rate of 9.46 tropical cyclones per year, this methodology produces 23 600 probabilistic years. Wind footprints are generated for each tropical cyclone based on the methodology developed by Holland (1980; updated 2008).[4,5] Similarly, storm surge footprints are generated using the US National Hurricane Center's Sea, Lake and Overland Surges from Hurricanes (SLOSH) model[6] coupled to a digital elevation model. This model estimates the water depth over land induced by historical and probabilistic hurricanes. Thus, a range of both realized and probable storm surge scenarios are available for the New Orleans metropolitan area.

It should be noted that in the wake of Hurricane Katrina, the USACE made significant improvements to the system of levees and flood walls that surround New Orleans. The impact of these improvements is implicitly accounted for within Swiss Re's storm surge model. This is achieved by assuming that no locations protected by the upgraded infrastructure are exposed to flood levels below the 100-year return period wind speed in the respective calculation unit.

The various types of physical assets are considered within the vulnerability component of the model, which links the event intensity with how various structures will respond to these events, such as a mobile home versus a reinforced concrete warehouse. As such, the model accounts for hundreds of construction qualities and occupancy types. Of relevance to this study is the fact that wastewater treatment plants, freshwater treatment plants and pumping and drainage stations are uniquely considered.

The vulnerability component is combined with the hazard component to benchmark and calibrate the full model. Both insured market portfolios and individual risk portfolios, such as telecommunications and utilities, are run through the model and the losses are compared to reported losses for historical events.

[3] http://www.swissre.com/library/88565222.html
[4] Holland, G. J. (1980). An analytic model of the wind and pressure profiles in hurricanes. Monthly weather review, 108(8), 1212-1218.
[5] Holland, G. (2008). A revised hurricane pressure-wind model. Monthly Weather Review, 136(9), 3432-3445.
[6] http://www.nhc.noaa.gov/surge/slosh.php

## 4.1 Assessment of physical damage potential to the SWB Asset Portfolio

Swiss Re analyzed a portfolio of 203 assets owned by SWB. Sixty-five of these assets were defined as critical by SWB. The replacement value of the building and contents of these assets is USD 3.4 billion; the assets identified as critical account for USD 2.9 billion of the total. The largest critical assets include pumping stations, followed by the Carrollton and Algiers water treatment plants.

Swiss Re ran the complete and critical asset portfolios through the TCUS model and calculated an annual expected loss. The latter was calculated by summing the losses across all events, and dividing by the number of years in the analysis. Some years will have no loss, while others will have large loss events. The annual expected loss shows how much one would have to budget annually to place into reserve for repairs from, in this instance, tropical cyclones. This first model output produces a baseline risk under current climate conditions and takes into account the current flood protection in place such as the Hurricane and Storm Damage Risk Reduction System (HSDRRS). Reflecting property damage only, the annual expected loss to the total portfolio is USD 10.5 million (thereof USD 6.6 million surge). Of this USD 10.5 million, the critical assets contribute USD 9.0 million (thereof USD 5.7 million surge), or 86%, to the total expected loss. The enhanced flood protection implemented by the city in the wake of Hurricane Katrina results in the high frequency part of the curves being dominated by wind losses, and losses beyond 100 years being dominated by storm surge. At 100 years, the physical damage to SWB assets amounts to USD 360 million (thereof USD 270 million surge) or slightly more than 10% of the total asset value. The 500-year return period produces physical damage of USD 1.0 billion (thereof USD 800 million surge).

## 4.2 Assessment of business interruption loss potential to the SWB

The physical damage to SWB assets, however, does not represent the full extent of the economic loss. The impact of business interruption to SWB revenue streams can be considerable. In 2005, based on trended analysis, SWB was anticipated to collect USD 172 million in revenue. However, as the impacts of Hurricane Katrina lingered for the remaining 130 days of 2005, sizeable drops in revenue are noticed. Considering the impact of historical events, the indexed revenue losses of the SWB are USD 51 million, USD 13 million and USD 11 million for Hurricanes Katrina, Gustav and Isaac respectively. For Katrina, this equated to a revenue loss of approximately USD 380 000 per day.

## 4.3 Sensitivity analysis of existing flood protections

New Orleans is a highly engineered city, given both its current location below sea level and the catastrophic damage it suffered in the aftermath of the levee failure upon Hurricane Katrina's landfall in August 2005. The levee systems and flood gates protecting the greater New Orleans area were massively improved after Hurricane Katrina. According to the USACE, with the 100-year level protection in place and drainage pumps operating, a 500-year storm event will produce flooding within Orleans Parish from overtopping and meteoric rainfall. However, the level of water will be well below critical depth and manageable in terms of resulting damage. The Federal Emergency Management Agency (FEMA) has certified the upgraded HSDRRS as protecting New Orleans to at least the "100-year" level[7].

[7] D.R. Johnson, J.R. Fischbach, K. Kohn, Current and Future Flood Risk in Greater New Orleans, RAND Corporation

While the HSDRRS protects New Orleans, it has only been tested once with Hurricane Isaac. In this case, the flood protection system proved successful in protecting New Orleans against storm surge. However, utilizing this single instance to assume the viability of the system beyond the design return period, when performing baseline modelling, would be optimistic. As such, Swiss Re modified the assumption about the return period to which the HSDRRS protected New Orleans. It did this to both demonstrate the importance of the HSDRRS and how further enhancing (or reducing) the level of protection might impact physical damage losses to the SWB.

The 200-year sensitivity run, which assumes that there are no storm surge damages as long as wind speeds do not exceed the 200-year return period, reduces the annual expected surge loss to USD 4.0 million or 40%. In this scenario, the 100-year storm surge property damage is very small, while the 500-year storm surge loss is reduced to USD 710 million, which corresponds to a reduction of slightly more than 10%.

Additionally, a 400-year sensitivity run was conducted again assuming that no surge damage is sustained as long as wind speeds do not exceed the 400-year return period. At this level of protection, the annual expected loss from surge is reduced to USD 2.2 million or a reduction of two thirds in property damage. The 100-year storm surge does not produce any damage, while the 500-year storm surge continues to produce a physical damage of USD 560 million, which corresponds to a reduction of 30%.

The protection through HSDRRS (whether to the 100-year level or higher) implies that individual hardening of SWB assets within the HSDRRS perimeter will be most effective if designed to very high protection levels of 100 years or more.

## 4.4 The impacts of future climate risk

As the climate continues to evolve in the coming decades, one can expect additional challenges particularly for near-coastal assets. For the purposes of this analysis, Swiss Re utilized 2050 climate change scenarios. The intention is not to represent the year 2050 exactly, but rather a time frame of 30 to 50 years. Utilizing the latest climate science on how climate change can impact hurricanes, Swiss Re relies on external analysis according to the Intergovernmental Panel on Climate Change scenarios[8]. The utilized scenario concludes that within the Atlantic Basin, the total number of tropical cyclones is likely to decrease, but the number of intense hurricanes (Category 4 or 5 intensity on the Saffir-Simpson Scale) are likely to increase. By the year 2100 under this climate model, it is expected that the number of major hurricanes (Category 3 and above) will increase by 40%.

The effects of storm surge in low-lying areas will worsen due to increasing sea levels. There are several causes for this including ocean thermal expansion. However, one that is particularly impactful for New Orleans is subsidence. Some studies estimated that parts of New Orleans are sinking at a rate of up to two inches per year[9]. Global models and regional projections predict increases of 0.9 to 2.5 feet of sea level increases by mid-century[10].

The risk to the SWB from storm surge-induced flooding will increase significantly by the 2050s due to shifts in both sea level rise and hurricane occurrence. By 2050, rising sea levels and changes to the frequency and intensity of hurricane events are expected to increase the SWB's annual expected loss by 90% to USD 12.5 million from storm surge and by 55% to USD 6.0 million from wind. A 100-year loss increases to an estimated total of USD 790 million while the 500-year loss from physical damage increases to USD 1.4 billion. Consequently, resilience measures designed to harden individual SWB assets will become increasingly important under changing climate conditions.

[8] https://www.gfdl.noaa.gov/global-warming-and-hurricanes/
[9] http://www.jpl.nasa.gov/news/news.php?feature=6513
[10] http://sealevel.climatecentral.org/uploads/ssrf/LA-Report.pdf

# 5 Resilience measure analysis to protect SWB assets

## 5.1 Operational improvements

As a result of the site visits and discussions with SWB management, we identified the following operational and process improvements which would contribute to the organization's overall resilience. These include the following:

### 5.1.1 Improve energy reliability measures

In defining the scope of work for our assignment, the SWB management highlighted the stresses on the organization's daily operations due to the availability issues of the power supply. It consequently requested a proposal for improvement opportunities.

- The fieldwork analysis and modelling performed confirmed the availability issues. However, it also identified the risk of complete disruption in the event of wind due to the fact that the power provided by Entergy is delivered above ground from its substation to the SWB Carrollton plant as well as to numerous critical pump stations.
- Although the SWB has already taken positive measures to reduce the exposure to temporary supply failures by installing emergency generators at critical locations, and by shifting its energy mix to rely mostly on self-produced energy, the latter still relies on steam generation. This utilizes refurbished 1920s equipment which is inefficient, well beyond its functional life span and not cost effective. After 80 years without any major power outages the SWB has experienced at least 4 major failures and several other 'near failures' since Hurricane Katrina.
- The numerous brief disruptions of power from the utility, which have been well documented by the SWB, have severe impacts on the drainage and purified water systems. For example, brief power disruptions lengthen the time to drain storm water as well as cause sudden drops in water pressure, which can ultimately result in mandatory 'boil water' orders.

To improve power supply reliability, cost effectiveness and eliminate exposure to wind events, we recommend building a new substation at the Carrollton site, which would be connected to the Entergy transmission substations via two underground transmission cables.

All details of the project including specifications, project planning, required legal and engineering expertise, costing, payback of project are available in a separate report. However, we should point out that the cost of implementation is estimated at USD 60-70 million with a 4- to 5-year payback based on estimated annual savings.

### 5.1.2 Define a recruitment strategy to include alternatives and succession planning to reduce impact of a shortage of skilled human resources

- Given the type of operations and the nature and age of the assets, the SWB requires a highly skilled workforce. Furthermore, there is strong dependency on specific members of staff who are critical to maintaining operations (e.g. Power Dispatcher Operations Central Control). The SWB organization has a planned workforce capacity of 1 200 people. However, as at June 2016, there were approximately 125 open vacancies to be filled and around 245 people eligible for retirement.
- We therefore recommend identifying key staff and formalizing succession planning for them. In addition, an in-house staff-hiring process needs to be developed in order to on-board staff faster. Moreover, we recommend sub-contracting or outsourcing certain positions to compensate for vacancies on critical positions. The HR strategy should also aim to further develop relationships with local universities and colleges and extend this approach to other states.

### 5.1.3 Improve protection of assets against fire/explosion hazards

During site visits, we observed that protection measures against fire/explosion hazards were insufficient.

- We noticed fire hazards due to the use of flammable or combustible products (diesel or oils for example). These products, coming into contact with heated items, could cause fire or explosion. In other areas, we observed the presence of wood or other flammable goods which would feed or spread fire.
- At the time of site visits, with the exception of certain buildings mainly located at the Central Yard, we only observed manual extinguishers. Some larger equipment, considered critical in terms of resilience or business continuity (e.g. turbines, transformers or backup generators) had no automated protection and are located in non-compartmentalized buildings. Since handheld extinguishers would be ineffective in the event of a fire, there is a high risk that the entire building would be destroyed.

SWB management should engage in full fire/explosion hazard assessment. This is considered a quick win since the time of assessment and related expenditure is minimal (USD 500 000 to USD 800 000 for turbine protection, and USD 2 million for large drainage pump stations, and other critical assets) in relation to the risk exposure. Protective measures against fire/explosion are key to evaluating risks covered by property damage and business interruption insurance policy premiums. Rapid action on this aspect could have significant value in premium negotiations. All sites should be considered, but priority should be given to sites such as the building where the turbine is located, the power building and the drainage pump stations with large backup generators (e.g. Drainage Pump Stations 6, 13).

### 5.1.4 Elevate storage of critical parts to reduce damage from flooding

During the course of site visits, we noticed that storage of critical parts could be improved since current storage practices expose these goods to damage from flooding.

SWB management should identify critical parts located in the onsite warehouses and elevate their storage to prevent their being damaged by flood:

- above 6 feet for the Central Yard warehouse
- above 12 feet for Algiers
- above 5 feet for Carrollton

### 5.1.5 Establish additional storage of critical parts for Algiers plant to improve reliability of supply

Storage of critical parts is located at a central location. The Central Yard warehouse and the Carrollton plant have dedicated storage capacity located onsite. However, the Algiers Plant does not have storage on site. Moreover, due to the location of the Central Yard warehouse, there is a potential risk that provision of supplies to the Algiers plant may be compromised or delayed, which would impact operations.

- SWB management should consider establishing a dedicated storage facility at the Algiers Plant for minimal backup supplies in existing buildings such as the old Head House where space is available. The added benefit will be to provide backup of critical parts to other sites in the event of the Central Yard becoming inaccessible. We estimate associated cost to be less than USD 500 000 for a significant reduction in exposure of said parts.

### 5.1.6 Input operations data into IT system to improve operational intelligence

The operations of the SWB assets and operations remain very manual since all operational data is collected and hand-written into log books. Although it appears that staff is diligent in collecting the information, the data cannot be analyzed and used for maintenance of operational improvements. Furthermore, we note that the maintenance policy largely focuses on corrective rather than predictive and preventive maintenance (75%/25%) which is not operationally and financially efficient.

- We recommend that all historic data be computed into an IT system and analyzed. Moreover, the Reliability Centered Maintenance methodology should be applied with key performance indicators used to improve operational efficiency and maintenance planning.

### 5.1.7 Develop an IT Dashboard of the SWB network to improve visibility of operations

The Central Control room at the Carrollton plant relies on paper charts of the operations framework. Operators manually update these with the help of basic communications (phone and radio) with the individual assets. There is no real-time view of the functioning of operations.

Central Control, serving as a hub of communications, has a critical role in many emergency operational situations. It is responsible for verifying and enforcing SWB's safety clearance procedures and associated clearances within the power distribution system.

In addition, it monitors local and regional weather to provide advance warning of storms which could affect power generation requirements for the drainage and sewerage systems. It also coordinates the various power supplies, including alternative backup power supplies. Additionally, the Central Control provides valuable information to the Office of Emergency Preparedness (OEP) during emergencies such as hurricanes, floods and freezes. It does this through established Board protocols. Lack of staffing continues to be a major issue for Central Control.

- SWB should automate this process to initially give visibility of the actual status of the various systems receiving power across the SWB power distribution system. There are approximately 244 points that can be automated using existing SCADA systems. We estimate the associated cost for the initial step (detailed in the Technical Report) to be USD 500 000 with an additional annual recurring cost of USD 15 000.
- A second step would be to automate the power distribution system with the Central Control room operators being able turn pumps on and off based on actual water levels. This action is estimated at USD 1.5 million.
- This would result in a significant reduction of dependency on manual processes and significant gain in remote control of operations.

### 5.1.8 Supply chain risks should be mitigated with further formalized analysis of dependencies

- With the robust machinery and skills of the people at the Facility Maintenance shop, the SWB is still able to keep 80+ year old equipment running. However, an equipment failure puts the component out of service until Facility Maintenance can repair or manufacture the needed components. Moreover, recovery time from a severe flooding event would not be minimized by storing critical components off-site. The aged equipment means there are no available manufacturers for spare parts to be purchased and stock-piled. In financial terms, these circumstances are probably a good deal more costly than would be a planned asset replacement approach and subcontracting of highly specialized maintenance functions.
- Where spare parts can be sourced, SWB maintains a large warehouse and dedicated staff to manage inventory. Their facility and processes are impressive. However, the main weakness of their inventory processes is a lack of interconnection with their antiquated CMMS system. This is a custom solution originally developed for SWB in the 1970s which was continually upgraded until the last update in the late 1990s.
- Many of the chemical suppliers for the water plants are based in St. Louis, Dallas, or Florida. This fact can be considered as positive in terms of exposure and resilience. However, in light of the plants' limited onsite storage capacity for some of these products, the resilience factor is weakened in the event of difficulty in accessing the plants for delivery. In addition, deliveries often do not arrive on time due to restrictions on driver working hours.

SWB management should analyze dependency on key suppliers and supply chain risks for critical parts. They should also formally establish alternative supply possibilities from alternative providers.

### 5.1.9 The risk of internal flooding of the East Bank WWTP site should be mitigated with the implementation of a by-pass of influents.

Since the site is protected by a flood wall, the Swiss Re modelling does not account for the specific risk of internal flooding from storm surge or excessive rainfall identified for the East Bank Waste Water Treatment Plant (East Bank WWTP). The protective measures for this particular risk should be treated by establishing a by-pass at the East Bank WWTP to avoid risk of flooding inside the facility.

The East Bank WWTP was heavily damaged by Hurricane Katrina, including extensive flooding of the entire site. As mitigation, an 18 feet tall surge/flood protection wall was subsequently built around the entire perimeter of the site and many buildings were raised. According to Swiss Re's modelling, these mitigation actions provide adequate storm surge/flooding protection. However, a risk remains in relation to flooding of the plant from possible excess influent flow, if the sewerage pump stations that feed the plant exceed the plant's peak hydraulic capacity.

To avoid damage to the plant, there is a need to reconfigure the existing headworks influent channel to incorporate a new overflow that directs flows exceeding the plant's peak design capacity to the existing plant drainage pump station. The estimated capital cost for this mitigation measure amounts to USD 6 million and is detailed in the Technical Report.

## 5.2 Surge hardening measures on SWB asset losses

Based on extensive site visits, we have defined and quantified the costs of hardening measures for all assets that SWB classified as critical. Hardening measures include raising sites/assets as well as flood and wind proofing. In order to test sensitivity, we used two benchmarks for raising sites/assets: (a) Expected water depths at 100- and 500-year surge events from the university of Louisiana's map that uses the Flood Insurance Rate Map data from FEMA (http://maps.lsuagcenter.com/floodmaps/) and from USACE. These scenarios assume that the physical flood protection system of the city holds and 100% pumping capacity. These scenarios assume that the physical flood protection system of the city holds, (b) Swiss Re-expected water depth ranges at a 100-year surge event after a failure of flood protection measures, rendering the impact of pumping irrelevant.

Given SWB's large-scale flood protection infrastructure, the additional storm surge hardening proposed by us on the basis of USACE 100-year and 500-year flood depths do not have a significant impact in terms of avoided losses. The annual expected physical damage from storm surge to all assets is reduced by approximately USD 120 000 or less than 2%, to USD 6.5 million.

Hardening measures proposed on the basis of Swiss Re's estimated 100-year flood depth ranges reduce the annual expected loss by slightly less than 50% to USD 3.8 million (i.e. an annual saving of USD 2.8 million). The complete set of identified hardening measures on the critical assets list amounts to a total of USD 690 million.

The analyses of the reduction in risk profile (% decrease of expected loss before and after mitigation) and the investment required relative to the asset insured determines a prioritized action plan ("strategic action plan") to assist in how to allocate capex more appropriately.

As a result, the focus can be placed on the "must have" mitigation measures for critical assets, while still paying close attention to "quick wins" (highest reduction with the least investment) versus the "good to haves" (high reduction but relatively high investment).

This strategic action plan amounts to a total investment of USD 404 million (equivalent to 25% of total value of assets selected in this plan for a reduction in expected loss of 64%).

### 5.2.1 "Must haves" correspond to a total investment of USD 160 million (46% of asset value) for a reduction of 60% in expected losses:

- For Station 4 at the East Bank Drainage Pump Station (investment USD 20.7 million, 19% of asset value for 63% reduction in expected loss), the mitigation measures include:
  - The elevation of the station by 12 – 13 feet to prevent flooding and relocation of electrical devices out of the basement.
  - The installation of a 3 750 kW generator with foundations, an Automatic Transfer Switch and a 10 000 gallon fuel storage capacity.

- For Station 7 at the East Bank Drainage Pump Station (investment USD 52 million, 58% of asset value, for a reduction of 61% in expected losses), the mitigation measures considered are:
  - The elevation of the station by 10 feet to prevent flooding and the relocation of electrical devices out of the basement.
  - The installation of a leakage pump system in the 25 Hz building.

- For Station A at the East Bank Sewerage Pump Station (investment USD 7 million, 15% of asset value for 43% reduction in expected loss), the mitigation consists of rebuilding the facility with the first floor elevation at 10 feet above surrounding ground, with a backup generator and placing the fuel supply at first floor elevation. This measure would also contribute to the hardening of the asset, since we noted that the wall of the building is deteriorating.

- For Station 11 at the West Bank Drainage Pump Station, (investment USD 60 million, for a reduction of 56% in expected losses), the mitigation measures considered are:
  - Elevating the station by 10 feet to prevent flooding

- For West Bank Waste Water Treatment Plant, (investment USD 20 million, 20% of asset value for 62% reduction in expected loss), the proposed mitigation is to construct a surge/flood protection perimeter wall for the site (including all associated planning, design, engineering, site works, ancillary works/structures, construction management, commissioning, training, etc.)

### 5.2.2 "Quick wins" correspond to a total investment of USD 6.5 million, 1% of asset value for a reduction of 72% in expected losses:

- For Station 14 at the East Bank Drainage Pump Station (investment USD 1.1 million, 3% of asset value for 76% reduction in expected loss), risk should be mitigated by:
  - Raising the 60 Hz transformer platform by 5 feet above ground
  - Adding a new transformer

- For Station 16 at the East Bank Drainage Pump Station (investment USD 1.1 million, 3% of asset value for 77% reduction in expected loss), the mitigations are composed of:
  - The installation of one 50 kW house generator
  - The elevation of the transformer platform by 5 feet
  - The addition of a new transformer

- For Station 20 at the East Bank Drainage Pump Station (investment USD 1.1 million, 7% of asset value for 99% reduction in expected loss), risks could be mitigated by:
  - Raising the 60 Hz transformer platform
  - Adding a new transformer
  - Returning failed pump to service

- For Carrollton Water Treatment Plant (investment USD 3.2 million, 0.3% of asset value for 70% reduction in expected loss), the proposed measure is to construct an 8 feet flood protection for about 10 installations.

- Finally for the Algiers site, the option proposed is a quick win in terms of investment in relation to the risk reduction obtained. However, since the solution of building a wall may not be acceptable to the local public, the mitigation measures proposed also include a potentially more acceptable alternative. The more straightforward option is to build a flood protection wall around the whole plant. An alternative could be to limit flood protection measures to specific individual assets. However, the cost for either option is estimated to be the same (USD 21 million), but with a significantly different impact on the reduction on the risk profile.

### 5.2.3 "Good to haves" correspond to a total investment of USD 277 million, 51% of asset value for a reduction of 56% in expected losses:

- For Station 19 at the East Bank Drainage Pump Station, (investment USD 63 million, 52% of asset value for close to 100% reduction in expected loss), mitigations consist of:
  - Raising the critical equipment above 12.5 feet elevation
  - Adding a new transformer

- For Station 3 at the East Bank Drainage Pump Station, (investment USD 53.5 million, 43% of asset value for 79% reduction in expected loss), proposed measures are to:
  - Elevate critical equipment above 11 feet
  - Relocate electrical out of basement and seal conduits in the basement

- For Station 6 at the East Bank Drainage Pump Station, (investment USD 160.7 million, 53% of asset value for 42% reduction in expected loss), the recommendation is to raise the whole equipment by 8 feet.

In addition to these measures, specific measures to improve reliability and resilience to wind have been identified for particular assets or sites.

- Hardening measures to improve reliability include:
  - Installing two 3 750 kW generators with foundations, an Automatic Transfer Switch and a 10 000 gallon diesel storage for the Carrollton Frequency Changer for an estimated capital cost of USD 7.4 million.
  - Adding a new transformer at the Pritchard facility at the East Bank Drainage Pump Station for an estimated capital cost of USD 200 000.

- Hardening measures to resist to storm for:
  - Drainage Pump Station 5:
    - Reinforce the roof structure of the old building for an estimated capital cost of USD 2 million.
  - Drainage Pump Station 10:
    - Add a new 60 Hz generator for an estimated capital cost of USD 4 million
    - Install hurricane rated equipment for an estimated capital cost of USD 150 000.
  - Drainage Pump Station 17:
    - Add a new 60 Hz generator for an estimated capital cost of USD 4 million
    - Reinforce the roof and structure for an estimated capital cost of USD 4 million
  - The Dwyer facility at the East Bank Drainage Pump Station:
    - Add a new 60 Hz generator for an estimated cost of USD 4 million
  - The Algiers site:
    - The high lift pump number 1 building should be hurricane-proofed, the cable tray buried and the transformers elevated, for an estimated capital cost of USD 500 000.
    - The storm proofing costs for the Station C and Ferric buildings are estimated at USD 500 000 and USD 50 000.
  - The storm proofing costs for the recycle basin MCC at the Carrollton plant are estimated at USD 360 000.
  - It is noted that in some cases, the storm-proofing measures also contribute to reducing the fire hazard.

## 5.3 Examining more efficient and comprehensive insurance coverages

While physical risk mitigation is always a primary priority to reducing future losses, not all risk can be averted. As such, it is important for the SWB to transfer residual risk away from the balance sheet and ultimately the citizens it serves. The SWB manages a property insurance program for its assets, which consists of both private commercial insurance and the National Flood Insurance Program (NFIP). With a portfolio exposure in excess of USD 3 billion, appropriate levels of insurance are critical to manage the residual risk, particularly with a 100-year return period loss potential of USD 360 million or 10% of the entire portfolio. Existing insurance purchases include USD 10 million of "named storm" coverage, however this does not include loses resulting from flooding or storm surge. For flood exposure, the SWB purchases individual NFIP policies on eighty-one critical assets, each with a maximum policy limit of USD 500,000. The limit of liability for these policies total USD 31m for the physical buildings or 1% of the total value of the properties.

- We recommend implementing new insurance solutions and increasing policy limits to ensure maximum coverage for residual risk. These solutions could be deployed on an individual asset basis, however a more efficient approach may be to introduce a "macro-hedge" against the entire portfolio as to eliminate existing coverage gaps, gaps in federal reimbursement and increase the speed at which insurance proceeds are received to facilitate SWB liquidity and rapid response.

# 6 System critical scenarios and their impact on SWB revenues and economic output of the city

We also identified 3 system-critical failure scenarios, including damage to the Recycle Basin MCC of the Carrollton Water Treatment Plant, the West Bank Control Room and East Bank Sewerage Pump Station A.

Wind damage to the roof of the Recycle Basin MCC building triggers the first scenario. The roof of the MCC building is metal. During major hurricane events wind speeds can reach between 120 and 156 mph causing severe damage to buildings, more specifically their metal roofs, pealing them away and exposing the MCC to the elements. The rain causes the electrical equipment to short and either trip the circuit breakers or cause fires. The Recycle Basin MCC could be fully destroyed. Consequently the recycle basin pumps will be unable to backwash the sand filters. Eventually the Water Treatment Plant would be forced to shut down after one day, leaving residents and businesses without fresh water. We calculate the downtime necessary to rebuild the MCC at approximately 30 days.

Since the Carrollton water treatment plant services approximately 80% of Orleans Parish, the city may lose GDP of approximately USD 800 million during this period. Revenue loss to the SWB will be in the USD millions. Roof hardening costs amount to an estimated USD 360 000 and are likely to be a good resilience investment for both SWB and the city.

The second scenario affects a raised power cable tray in the West Bank Control Room (Station C Building). During major hurricane events, strong winds can cause flying debris to damage Station C's building roof and the raised power cable tray. The two feeders from Entergy supplying power to the Control room switchgear would be lost. Carrollton's remaining 25 Hz feeder number 26 would also be down. Control would start the generator to supply 60 Hz power to the plant. The power cables to the pumps for the water intakes, which supply water to the Algiers Water Treatment Plant from the Mississippi, would also be lost, shutting down the plant entirely. Residents and businesses would lose water supply after one day. Downtime to enable replacement of the power cables is estimated to be 15 days. Since the West Bank services approximately 20% of Orleans Parish, the city may lose approximately USD 100 million in GDP. Revenue loss to the SWB,will be in the USD millions. Hardening costs of the Station C roof amount to an estimated USD 500 000 and are likely to be a good resilience investment for both SWB and the city.

A third irreplaceable asset is the East Bank Sewerage Pump Station A. If Station A fails for whatever reason, no sewerage would be pumped from the Central Business District and from Sewerage Pump Stations 1, 3, 5, 6, 8, 9, 14 and 15. As a result, sewerage would back up. Downtime to repair is estimated at 2 weeks, but it is difficult to quantify affected GDP. Revenue loss to the SWB will be in the USD millions. Hardening costs amount to an estimated USD 7 million.

# 7 Conclusions

Since the existing level of protection is already at a high level, a general hardening of all critical SWB assets against physical damage does not appear to offer the best value for money. Instead, the most impactful course of action promises to be a two-pronged approach which focuses on reducing downtime of SWB operations (and therefore negative indirect damage to the city) and hardening of individual assets with the highest reduction in annual expected losses. One month of city downtime represents 5 times the expected annual damage to city assets.

# 8 Recommended next steps

1. Discuss the opportunity to implement the strategic action plan.
2. Perform an analysis of SWB's risk tolerance in light of the risk exposure and associated mitigation actions to review existing capital expenditures and determine a revised investment plan.
3. Analyze interdependencies of various assets and critical business interruption scenarios in more detail. The indirect impact on New Orleans is significant.
4. Assess and develop emergency response and recovery interventions that can reduce downtime in the case of flood wall failure.
5. Identify risk transfer options that complement existing and potential future protection measures of SWB assets; identify risk transfer options that pre-finance emergency response and recovery interventions

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In preparing this report, our primary source of information has been the Sewerage and Water Board of New Orleans ("the Board"). We do not accept responsibility for such information which remains the responsibility of the Board. The information and opinions contained in the report are provided as at the date hereof and are subject to change without notice. Although this report has been prepared in good faith and with the greatest care, Veolia and its affiliates under no circumstances warrant the accuracy or completeness of the information given in the report. All liability for the accuracy and completeness thereof or for any damage or loss resulting from the use of the information contained in this report is expressly excluded. Under no circumstances shall Veolia or its affiliates be liable for any financial or consequential loss relating to the use of this report.

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# STATEWIDE AGREED-UPON PROCEDURES

The agreed-upon procedures below are intended to represent a minimum level of work to be performed on those local governments with annual revenues of $500,000 or more, as well as those nonprofits receiving $500,000 or more in state and/or local government assistance (i.e. those entities meeting the criteria for an audit under the Audit Law).

These agreed-upon procedures are to be performed under the AICPA attest standards; and the agreed-upon procedures report will be attached to the audit report that is submitted to the Legislative Auditor's office (i.e. one report submission rather than two).

The practitioner should consider these procedures to be "complementary" rather than "additive" as they often relate to existing audit procedures under AICPA and GAO requirements. For example, if the procedure below indicates that 25 random transactions should be selected and the practitioner would otherwise plan to test 40 random transactions as part of the entity's audit, the practitioner may use 25 of the 40 transactions for both the audit and the agreed-upon procedures engagement/report.

All exceptions are to be included in the agreed-upon procedures report, but may be accompanied by management's or the practitioner's additional explanation (e.g. mitigating circumstances or compensating controls) at the practitioner's discretion. If included, these additional explanations should be prefaced with "Management represents…." or "The Practitioner believes that the following compensating controls fully mitigate the exception(s) noted…"

If the entity employs one or more internal auditors, the practitioner documents reliance upon the internal audit function as part of the audit, and the internal auditor performs one or more of the specific agreed-upon procedures below, the practitioner does not have to perform those procedures as part of the agreed-upon procedures engagement. In that situation, the practitioner should perform the remaining agreed-upon procedures under the attest standards and document in the agreed-upon procedures report. Those procedures performed by the internal auditor should be attached as an appendix to, and referenced in the agreed-upon procedures report.

Please note that the results of the agreed-upon procedures do not change the practitioner's separate responsibility to report significant deficiencies, material weaknesses, material noncompliance, etc., as part of the regular audit engagement. However, the practitioner should not include the agreed-upon procedures exceptions (or a reference to the exceptions) in the audit report's schedule of findings, unless an agreed-upon procedures exception or exceptions rise to the level of a significant deficiency or material weakness, and are included as a finding for purposes of the audit.

To avoid creating an undue burden on practitioners, the agreed-upon procedures may be performed for a 12-month period that does not coincide with the entity's fiscal year, as long as the 12-month period is no more than 3 months prior to the end of the entity's fiscal year. For

# STATEWIDE AGREED-UPON PROCEDURES

example, the practitioner may perform agreed-upon procedures for the period October 1, 2015 through September 30, 2016 for an entity with a fiscal year ending December 31, 2016.

### *Written Policies and Procedures*

1. Determine if the entity has written policies and procedures for each of the following financial/business functions, as applicable:

    - ***Budgeting***, including preparing, adopting, monitoring, and amending the budget
    - ***Purchasing***, including (1) how purchases are initiated; (2) how vendors are added to the vendor list; (3) the preparation and approval process of purchase requisitions and purchase orders; (4) controls to ensure compliance with the public bid law; and (5) documentation required to be maintained for all bids and price quotes.
    - ***Disbursements***, including processing, reviewing, and approving
    - ***Receipts***, including receiving, recording, and preparing deposits
    - ***Payroll/Personnel***, including (1) payroll processing, and (2) reviewing and approving time and attendance records, including leave and overtime worked.
    - ***Contracting***, including (1) types of services requiring written contracts, (2) standard terms and conditions, (3) legal review, (4) approval process, and (5) monitoring process
    - ***Credit Cards (and debit cards if applicable)***, including (1) how cards are to be controlled, (2) allowable business uses, (3) documentation requirements, (4) required approvers, and (5) monitoring card usage
    - ***Travel and expense reimbursement***, including (1) allowable expenses, (2) dollar thresholds by category of expense, (3) documentation requirements, and (4) required approvers
    - ***Ethics***, including (1) the prohibitions as defined in Louisiana Revised Statute 42:1111-1121, (2) actions to be taken if an ethics violation takes place, (3) system to monitor possible ethics violations, and (4) requirement that all employees, including elected officials, annually attest through signature verification that they have read the entity's ethics policy. Note: Ethics requirements are not applicable to nonprofits.

### *Board (or Finance Committee, if applicable)*

1. Obtain board minutes for the fiscal year.

2. Determine if the managing board met on at least a monthly basis, or on a frequency in accordance with the board's enabling legislation, charter, or other equivalent document.

# STATEWIDE AGREED-UPON PROCEDURES

3. Determine if the meeting minutes during the fiscal year referenced or included monthly financial information, including budget-to-actual comparisons on all funds (General Fund, Special Revenue Fund, Utility Fund, etc.).

4. Determine if any of the meeting minutes during the fiscal year included a discussion of financial-related matters, such as the approval of contracts and disbursements.

5. If the monthly budget-to-actual comparisons on funds show that management was deficit spending during the period under examination, determine if there is a formal/written plan to eliminate the deficit spending for those entities with a fund balance deficit. Determine whether the meeting minutes for at least one board meeting during the period reflect that the board is monitoring the plan.

## *Bank Reconciliations*

1. Obtain a listing of client bank accounts from management and management's representation that the listing is complete.
2. Select all of the entity's bank accounts (if five accounts or less) or one-third of the bank accounts on a three year rotating basis (if more than 5 accounts) Note: School student activity fund accounts may be excluded from selection if they are otherwise addressed in a separate audit or agreed-upon procedures engagement. For each of the bank accounts selected, determine if:
    - Bank reconciliations have been prepared by the client for all months in the period covered by the financial statements.
    - Any reconciling items have been outstanding for more than 6 months as of year-end.
    - There is evidence of management review of all bank reconciliations by someone independent of the cash receipt and disbursement functions of the fund with which that person is associated.

## *Cash Collections*

1. Obtain a listing of cash collection locations and management's representation that the listing is complete.
2. Select all of the entity's cash collection locations (if five locations or less) or one-third of the cash collection locations on a three year rotating basis (if more than 5 locations). Note: School student activity funds may be excluded from selection if they are otherwise addressed in a separate audit or agreed-upon procedures engagement.

# STATEWIDE AGREED-UPON PROCEDURES

3. For each cash collection location selected above, determine if the person or persons responsible for collecting cash are bonded and:
   - Not responsible for depositing the cash in the bank, recording the related transaction, or reconciling the related bank account (note if there are compensating controls performed by an outside party)
   - Not working out of the same cash register or drawer
4. For each cash collection location selected above, select the highest (dollar) week of cash collections and determine if cash deposits were made daily.
5. For each cash collection location selected above, identify and report each of the entity's revenue sources or additions to agency funds that involve the receipt of cash or checks made payable to cash. For each of these revenue sources at the selected locations:
   - Randomly select one week of deposits and determine if the entity's practices include a reconciliation of daily deposits to supporting documentation, such as sequentially numbered receipts, by a person who is not responsible for cash collections.
   - Determine if the entity has a process specifically designed (or identified as such by the entity) to determine completeness of collections for each revenue source and agency fund additions, such as periodic confirmation with outside parties, reconciliation to utility billing (after cutoff procedures), reconciliation of traffic ticket number sequences, agency fund forfeiture monies, etc., by a person who is not responsible for cash collections.

***Disbursements - General***

1. Obtain a listing of entity purchases (excluding credit card purchases) or, alternately, obtain the general ledger and sort/filter for entity purchases. Obtain management's representation that the listing or general ledger is complete.
2. Randomly select 25 purchases (or select purchases constituting at least one-third of the dollar disbursement/purchase population if less the entity had less than 25 transactions during the year),excluding credit/debit/fuel card purchases, and determine if:
   - Purchases were initiated using a requisition/purchase order system.
   - Purchase orders were approved by a person who did not initiate the purchase.
   - Payments for purchases were not processed without:
     a. An approved requisition and/or purchase order
     b. A receiving report showing receipt of goods purchased
     c. An approved invoice

# STATEWIDE AGREED-UPON PROCEDURES

3. Determine if the person responsible for processing expenditures is prohibited from adding vendors to the entity's purchasing/disbursement system.

4. Determine if the chief executive officer, or designee, who signs checks or makes the final authorization for disbursements has no responsibility for initiating or recording purchases.

5. Determine if the supply of blank/unused checks is maintained in a secured, locked location, and access is restricted to those persons that do not have signatory authority.

6. If a signature stamp or signature machine is used, determine if it is under the control of the signer or is used only with the knowledge and consent of the signer. Determine if the signed checks are likewise maintained under the control of the signer or authorized user until mailed.

***Credit/Debit/Fuel Cards***

1. Obtain from management a listing of all active credit cards, bank debit cards, and fuel cards, as applicable), including the card numbers and the names of the persons who maintained possession of the cards. Obtain management's representation that the listing is complete.

2. Obtain the monthly statements for all cards used during the period under examination. Select the largest (dollar) monthly statement for each card and:

    - Determine if each monthly card statement (including supporting documentation) was reviewed and approved, in writing, by someone other than the authorized card holder. [Note: Requiring such approval may constrain the legal authority of certain public officials (e.g., mayor of a Lawrason Act municipality); these instances should not be reported.)]
    - Determine if finance charges and/or late fees were assessed on the monthly card statements.

3. From each monthly card statement selected above, select the 10 largest purchases. (Note: For a debit card, select the monthly bank statement with the largest dollar amount of debit card purchases and select the 10 largest purchases):

    - For each selected transaction, obtain the entity's supporting documentation and determine if each is supported by:

        - An original itemized receipt (i.e., identifies precisely what was purchased)

- Documentation of the business/public purpose (Note: For meal charges, there should also be documentation of the individuals participating)

- Other documentation as may be required by policy (e.g., purchase order, authorization, etc.)

- For each selected transaction, determine if selected purchases effectively circumvented the entity's written procurement/purchasing procedures and/or the Louisiana Public Bid Law (i.e., large or recurring purchases requiring the solicitation of bids or quotes).
- For each selected transaction, determine if the transaction was for a legally allowable purpose (i.e. for a business rather than personal purpose). If not, report the actions taken by management. If unable to determine, the practitioner should report the results and state that he/she was unable to determine if the transaction was for a legally allowable purpose.

***Travel and Expense Reimbursement***

1. Obtain a listing of all travel and related expense reimbursements during the period or, alternately, obtain the general ledger and sort/filter for travel reimbursements. Obtain management's representation that the listing or general ledger is complete. Select for review the three persons who incurred the most travel costs during the year:

   - Obtain all of the expense reimbursement reports or prepaid expense documentation of each selected person, including the supporting documentation, and choose the largest travel expense for each person to review in detail:
     - Determine if each expenditure is
       - Reimbursed and/or prepaid in accordance with written policy (e.g., rates established for meals, mileage, lodging, etc.) and applicable laws
       - In accordance with thresholds or guidelines established in the policies and procedures
       - For a legally allowable business purpose relative to the travel. If unable to determine, the practitioner should report the results and state that he/she was unable to determine if the expenditure was for a legally allowable purpose.

     - Determine if each expenditure is supported by:

       - An original itemized receipt (i.e., identifies precisely what was purchased) [Note: An expense that is reimbursed based on an established per diem amount (e.g., meals) generally does not require a receipt.]

- Documentation of the business/public purpose (Note: For meal charges, there should also be documentation of the individuals participating)
- Other documentation as may be required by policy (e.g., authorization for travel, conference brochure, certificate of attendance, etc.)

- For each selected transaction, determine if the transaction was for a legally allowable purpose (i.e. for a business rather than personal purpose, such as hotel stays for conference days only). If not, report the actions taken by management. If unable to determine, the practitioner should report the results and state that he/she was unable to determine if the transaction was for a legally allowable purpose.
- Determine if each expense report (including documentation) was reviewed and approved, in writing, by someone other than the person receiving reimbursement.

***Contracts***

1. Obtain a listing of all contracts in effect during the period or, alternately, obtain the general ledger and sort/filter for contract payments. Obtain management's representation that the listing or general ledger is complete.

2. Select the five contract "vendors" that were paid the most money during the period (excluding purchases on state contract and excluding payments to the practitioner) and obtain the related contracts and paid invoices.

   - Determine if there is a formal/written contract that supports the services arrangement and the amount paid.
   - Determine if the transaction is subject to the Louisiana Public Bid Law or Procurement Code:
     - If yes, determine if the entity complied with all requirements (e.g., solicited quotes or bids, advertisement, selected lowest bidder, etc.)
     - If no, determine if the entity solicited quotes for the transaction/work as a best practice. If not, document management's justification.
   - Determine if the contract was amended. If so, determine whether the original contract contemplated or provided for such an amendment. Furthermore, determine if the amendment is outside the scope of the original contract, and if so, whether it should have been separately bid and contracted.
   - Select the largest payment from each of the five largest contracts selected above and determine if the invoice(s) received and payment complied with the terms and conditions of the contract.
   - Determine if there is documentation of board approval, if required.

# STATEWIDE AGREED-UPON PROCEDURES

## *Payroll and Personnel*

1. Obtain a listing of employees with their related salaries, and obtain management's representation that the listing is complete. Select the five highest paid employees and:
   - Determine if payments issued during the period under examination were done in strict accordance with the terms and conditions of the employment contract or pay rate structure.
   - Determine if changes made to hourly pay rates/salaries during the period under examination were approved in writing and in accordance with policy.
2. Select the attendance and leave records for one pay period in which leave has been taken by at least one employee, Randomly select 25 employees (or select one-third of employees if the entity had less than 25 employees during the year), and:
   - Determine if selected employees are documenting their daily attendance and leave (e.g., vacation, sick, etc.). (Note: Generally, an elected official is not eligible to earn leave and does not document his/her attendance and leave. However, if the elected official is earning leave according to policy and/or contract, the official should document his/her daily attendance and leave.)
   - Determine if supervisors are approving, electronically or in writing, the attendance and leave of selected employees.
   - Determine if the entity is maintaining written leave records (e.g., hours earned, hours used, and balance available) on selected eligible employees.
3. Select the two largest termination payments (e.g., vacation, sick, compensatory time, etc.) made during the period under examination, if applicable. Determine if the payments were made in strict accordance with policy and/or contract and approved by management.
4. Determine if, at the end of the fiscal year, the employee and employer portions of payroll taxes and retirement contributions were submitted to the applicable agencies by the required deadlines.

## *Ethics (excluding nonprofits)*

1. From the listing of employees obtained under "payroll and personnel" above, randomly select five employees (include elected officials, if applicable, in the population).
   - Determine if a signed verification of having read the ethics policy is located in the employee file for the fiscal year.
   - Determine if evidence is maintained to indicate required ethics training was completed.

# STATEWIDE AGREED-UPON PROCEDURES

- Determine if there were any ethics violations reported to the entity during the year
- Determine if the actions the entity took to investigate alleged ethics violations, and corrective actions taken, agreed to the entity's ethics policy, if applicable.

***Debt Service***

1. If debt was issued during the period, determine if State Bond Commission approval was obtained, as applicable.
2. If applicable, determine if the entity complied with debt covenants, including making scheduled payments, maintaining required debt reserves, and reporting required financial information to EMMA (Electronic Municipal Market Access).

***Other***

1. If applicable, determine if the entity has reported any misappropriations of public funds or assets to the legislative auditor and the district attorney of the parish in which the entity is domiciled.
2. If applicable, disclose any instances of management override of controls identified in the agreed-upon procedures above and management's justification for the override(s).

# Sewerage and Water Board of New Orleans
# Tracking Tool for Commitments to City Council
# December 2016

**Status Key** | On Target | Not Started | Delayed | Needs Attention

| Topic | Commitment | Target Date | Status | Next Steps | Strategic Plan Reference |
|---|---|---|---|---|---|
| **I. Governance Practices** | A. Reduce the length of Board member terms and limiting the number of terms. | October 2013 | Completed June 17, 2013. Senate Bill No. 47 reduced the term lengths from 9 to 4 years and limiting members to serving two consecutive terms. | None. | Strategy IV Tactics I.1 and I.2 |
| | B. Establish requisite qualifications for Board members. | October 2013 | Completed June 17, 2013. Senate Bill No. 47 requires experience in architecture, environmental quality, finance, accounting, business administration, engineering, law, public health, urban planning, facilities management, public administration, science, construction, business management, consumer or community advocacy, or other pertinent disciplines, with two of the appointments as consumer advocates with community advocacy or consumer protection experience or experience in a related field. | None. | Strategy IV Tactic I.3 |
| | C. Reduce the number of Board members. | October 2013 | Completed June 17, 2013. Senate Bill No. 47 reduced the size of the Board from 13 to 11 members. | None. | Strategy IV Tactic I.4 |
| | D. Review function and responsibilities of Board committees. | Not determined. | Completed August 19, 2015. Board of Directors revised Bylaws based upon recommended best practices contained in New Orleans Office of Inspector General Guide for Boards, Commissions, and Public Benefit Corporations. | None | Strategy IV Tactic I.5 |
| | E. Appoint Board members from recommendations submitted by university presidents. | October 2013 original<br>*May 2014 revised* | Completed May 22, 2014. New board members appointed. | None. | Strategy IV Tactic I.6 |
| | F. Establish dedicated independent oversight of Sewerage and Water Board determined by the City Council. | Not determined. | Completed May 30, 2013. Staff presents to Public Works Committee of City Council as scheduled on identified questions and concerns. | None. | Strategy IV Tactic M |

## Sewerage and Water Board of New Orleans
## Tracking Tool for Commitments to City Council
## December 2016

**Status Key** — On Target | Not Started | Delayed | Needs Attention

| Topic | Commitment | Target Date | Status | Next Steps | Strategic Plan Reference |
|---|---|---|---|---|---|
| **II. Customer Service Improvements** | A. Acquire and implement Advanced Metering Infrastructure. Replace existing mechanical meters with new electronic meters and an automated meter reading system that will provide more accurate readings, enhanced leak detection on customer lines, and improved account monitoring. The new meters will be installed for the residential and small commercial customer base. | December 2016<br>*December 2018 revised* | On target. Request for Information issued to potential vendors. Information submitted by ten vendors reviewed by staff and interviews conducted. Requests for proposals issued by other utilities being reviewed. A revised standard for purchasing new meters has been completed. Pilot demonstration of leak detection and automated shutoff capabilities underway. Project will be fully initiated following implementation of new billing system. | Continue replacement of existing manual-read meters with electronic-read meters. Determine if outside expert assistance will be needed in project management. Develop a preliminary implementation plan and issue a request for proposals for change-out of residential and small commercial meters and installation of automated meter reading capabilities. Confirm targeted completion date following implementation of new customer account management system. | Strategy III Tactic B |
| | B. Open Additional Customer Service Center to provide convenient access to full service capabilities for customers without travelling to the downtown location. | December 2013 original<br>*On hold* | Delayed pending establishment of Billing Review Contact Center staff that will rotate during the month to locations throughout the community. Funding for Billing Review Contact Center staff included in 2017 Budget. | Hire staff and identify locations and schedules. | Strategy III Tactic H |
| | C. Replace existing billing application with new software that includes online customer account management capabilities. | January 2015 original<br>*October 2016 revised* | On target. Customer Service Management System from Cogsdale Corporation implementation go-live set for October 24, 2016. | Execute remaining steps of project plan. | Strategy III Tactic C |
| | D. Replace existing work order application with new software that includes online work order tracking and appointment scheduling capabilities. | December 2017 | Not started. | Next steps to be determined as part of the development of an Information Technology Strategic Plan. | Strategy III Tactic D and E<br>Strategy IV Tactic D |
| | E. Improve efficiency and reliability of Customer Service processes. Reduce the volume of calls by increasing perceived accuracy of bills. Ensure meter reading and billing edits are worked diligently. Improve the customer experience when questioning a bill and resolve more issues during the first call. Provide more effective appeals process. | Ongoing | Previous Customer Service Improvement Plan completed October 31, 2014. New Customer Service Improvement Plan adopted June 17, 2015. Customer service metrics reported monthly to Finance / Administration Committee and Quality of Life Stat meetings. | None. | Strategy III Tactics A, F, and G |
| **III. Service Assurance Program** | A. Provide additional funding for bill payment assistance through the Water Help program. | January 2013 | Completed January 31, 2013. Funding for bill payment assistance through the Water Help program increased from $60,000 to $240,000. Process with Total Community Action was streamlined. | None. | Strategy III Tactic I.1 |

## Sewerage and Water Board of New Orleans
## Tracking Tool for Commitments to City Council
## December 2016

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| Topic | Commitment | Target Date | Status | Next Steps | Strategic Plan Reference |
|---|---|---|---|---|---|
| | B. Expand Water Help program to provide assistance with plumbing repairs. | June 2013 original<br>*On hold* | Original initiative completed March 31, 2014. Program provides up to $250 for plumbing repairs on the customer's portion of the service line. However, this program was not successful in providing effective support to low-income elderly and handicapped customers for their plumbing repairs. | Evaluate program to focus support onto replacement of lead service lines. | Strategy III Tactic I.2 |
| | C. Pursue legislative change to allow adjustments for water lost through customer leaks. | March 2013 original<br>*March 2016 revised* | Completed March 16, 2016. R.S. 33:4071(F) authorized Sewerage and Water Board to adopt rules and procedures to adjust water bills. Adjustment policy developed and adopted. | None. | Strategy III Tactic I.3 |
| | D. Evaluate waiver of service charges based on means testing for qualifying low-income elderly and disabled customers. | June 2013 | Completed July 17, 2013. Staff recommended that the Board not adopt a waiver of these service charges based on means testing. Recommendations accepted by Board of Directors. | None. | Strategy III Tactic I.4 |
| | E. Evaluate reduction in late payment fee, disconnect fee, returned check fee, and deposits. | March 2013 original<br>*June 2013 revised* | Completed July 17, 2013. Because of the significant revenue loss associated with a reduction in late payment fees and disconnect fees, staff recommended that consideration of changes to these fees be deferred until after the first full year of revenues have been received from the new rates in order to ensure that revenues from the new rates are sufficient to allow for this offsetting reduction in fees while still accomplishing other financial objectives. Revenues from the new rates have not been sufficient to allow reduction in fees. | None. | Strategy III Tactic I.4 |
| **IV. Operational Reforms** | A. Improve operations through performance measures, improved framework, and follow-up reviews to reduce future rate increases. | December 2017 | On target. Training program developed and underway for frontline employees. Performance measures reviewed and developed. Significant savings from improved procurement of goods and services. | Process documentation, analysis, and improvement objectives combined with cost reduction are included in several senior management goals. Document and report improvement results. | Strategy II Tactic D<br>Strategy IV Tactics B and H<br>Strategy IV Tactic M |

## Sewerage and Water Board of New Orleans
## Tracking Tool for Commitments to City Council
## December 2016

**Status Key** — On Target | Not Started | Delayed | Needs Attention

| Topic | Commitment | Target Date | Status | Next Steps | Strategic Plan Reference |
|---|---|---|---|---|---|
| | B. Reduce free water and sewer service provided to municipal accounts by fifty percent from a baseline of 2010 usage. | December 2017 | On target. Quantity of free service reduced from 2010 to 2015 by 22.0%. School system billing piloted for consumption beginning July 2013. No changes to related laws were initiated for 2015 Louisiana legislative session. | Continue work with property administrators at municipal facilities to identify opportunities for reduced consumption. Coordinate with revenue-producing agencies to pursue legislative relief from burdensome requirements for free service. | Strategy II Tactic F |
| | C. Improve coordination between Sewerage and Water Board and Department of Public Works. | Not determined. | On target. A joint team of Sewerage and Water Board engineers and Department of Public Works engineers work together in coordination of planning and construction for the FEMA Recovery Roads program. | Determine feasibility of performing street drainage maintenance work on a fee-for-service basis, subject to identification of funding requirements, establishment of a funding stream, and gaining necessary legislative authorizations. | Strategy I Tactics A.1, B.1, and C.4 |
| | D. Improve ratepayer collections. | Not determined. | Completed December 31, 2013. Plans to improve collections have recently focused on ensuring close compliance with schedules for non-payment turn-offs. The amount written off as uncollectable has reduced from 10.23% in 2010 to 1.47% in 2015. | None. | Strategy IV Tactic G |
| | E. Develop a long-term staff succession and training program. | Not determined. | On target. A partnership between Delgado Community College, the Sewerage and Water Board of New Orleans and the JOB1 Business and Career Solutions Center has launched a worker training program aimed at increasing the pool of certified water and wastewater treatment personnel to meet the anticipated demand for workers to operate the systems. Delgado has applied to become a certification testing site. | In conjunction with the City's JOB1 program and Sewerage and Water Board, Delgado Community College will develop training to increase the pool of certified personnel to meet the needs of the capital improvement program. Knowledge management and succession planning objectives have been added to several senior management goals. | Strategy V Tactic G |
| | F. Perform annual water audit to measure progress and critical needs. | Ongoing. | Completed September 8, 2015. Water Audits have been performed for 2008 through 2014. | None. | Strategy IV Tactic K |
| | G. Enhance long range planning by developing a Facilities Plan for 2015-2035. | December 2014 | Completed August 4, 2015. Recommendations incorporated into 2016-2025 Capital Improvement Plan. | None. | Strategy I Tactic F.1 |

## Sewerage and Water Board of New Orleans
## Tracking Tool for Commitments to City Council
## December 2016

**Status Key** | On Target | Not Started | Delayed | Needs Attention

| Topic | Commitment | Target Date | Status | Next Steps | Strategic Plan Reference |
|---|---|---|---|---|---|
| | H. Develop new sources of funding other than water and sewer rate increases. | Ongoing. | On target. New revenue stream established for handling wastewater from mobile containers, such as portable toilets and shipping containers. | Analyze opportunities for providing wholesale water service over long distances. | Strategy II Tactic I |
| | Repay funds owed to Department of Public Works. | December 2016 | On target. Sewerage and Water Board has repaid $11,767,936.75 to Department of Public Works during 2013-2016. Remaining balance will be paid in 2016. | Pay remaining obligation owed to the Department of Public Works by year-end 2016. | Strategy II Tactic E |
| **V. Economic Opportunities** | A. Create economic opportunities consistent with City of New Orleans programs for participation by economically disadvantaged and local business enterprises. | Not determined. | On target. For contracts with DBE participation 2015: Goods and Services $501,365 or 32%, Construction $9,578,745 or 33%, and Professional Services $5,137,012 or 17%. | Sewerage and Water Board will continue to create economic opportunities for participation by economically disadvantaged and local business enterprises through Construction Review Committee and Staff Contract Review Committee recommendations and DBE vendor support and training. | Strategy IV Tactics F and L |
| **VI. Capital Improvement Program** | A. Water System Improvements Replacement and rehabilitation of water purification plant facilities. Replacement and rehabilitation of water pumping facilities. Replacement of water system transmission and distribution mains. $277,000,000 | December 2020 | On target. 2016 Capital Budget fully funded. Progress on capital projects reported to Board of Directors. | Continue execution of capital improvement program. | Strategy I Tactic A.1 through A.5 |
| | B. Replacement and rehabilitation of sewer system collection pipes required by Federal Consent Decree. $314,000,000 | December 2020 | On target. 2016 Capital Budget fully funded. Progress on capital projects reported to Board of Directors. | Continue execution of capital improvement program. | Strategy I Tactic B.1 through B.3 |
| **VII. WaterStat Reporting and City Council Oversight** | A. Establish performance measures and targets as well as reporting methodology. | March 2013 | Completed March 31, 2013. Measurements framework adopted, initial measurements identified, and measurements training delivered to senior management. Collection of performance data in progress. Additional graphs created. | None. | Strategy IV Tactics A and B |

## Sewerage and Water Board of New Orleans
## Tracking Tool for Commitments to City Council
## December 2016

**Status Key** — On Target | Not Started | Delayed | Needs Attention

| Topic | Commitment | Target Date | Status | Next Steps | Strategic Plan Reference |
|---|---|---|---|---|---|
| | B. Implement a systematic approach to process documentation, analysis, and improvement. | June 2013 | Completed April 1, 2014. Training program developed and contract for training delivery awarded. Departmental training plans developed in March 2014 and business skills training began in April 2014. Improvement initiatives identified by training participants. | None. | Strategy II Tactic D<br>Strategy IV Tactic H |
| | C. Perform follow-up reviews to document results and efficiencies achieved. | January 2014 original<br>*December 2014 revised* | Completed September 18, 2015. Louisiana R.S. 33:4091 Reports of Board issued to City Council. | None. | Strategy IV Tactic B |
| | D. Provide maps showing maintenance work completed, capital projects completed, and planned capital improvements. | January 2013 and Ongoing | Completed January 1, 2013 for printed maps. Online Tool to Track Road Construction Across New Orleans released on March 10, 2015. | None. | Strategy IV Tactic M |
| | E. Document FEMA receipts and uses of funds. | January 2013 and Ongoing | Completed January 1, 2013. Summary of FEMA receipts and uses of funds is provided to Board committees each month. | None. | Strategy IV Tactic M |
| | F. Initiate annual meetings with citizens of each council district to regularly report on organizational performance results. | May 2014 original<br>*December 2014 revised* | Completed December 2014. Sewerage and Water Board staff regularly attend meetings in each council district upon request. | None. | Strategy IV Tactic M |
| | G. Provided written updates to the Clerk of the City Council. | Quarterly and As Requested. | Completed May 30, 2013. | None. | Strategy IV Tactic M |

| Statistics | |
|---|---|
| Completed | 21 |
| On Target | 11 |
| Not Started | 1 |
| Delayed | 2 |
| Needs Attention | 0 |
| **Total** | **35** |